



Naloxone and Out-of-Hospital Cardiac Arrest

Key Article

- Dillon DG, Montoy JCC, Nishijima DK, et al. Naloxone and patient outcomes in out-of-hospital cardiac arrests in California. *JAMA Network Open* 2024; 7:e2429154.

Background

- Over the past several decades, OHCA due to drug overdose have been increasing.
- The incidence of opioid-associated (OA) OHCA increased to between 7%-14%. In a recent study, over 17% of EMS-attended OHCA in San Francisco County were thought to be drug-related.
- Naloxone reverses OA apnea and altered mental status. It is also reported to reverse opioid-related myocardial depression and stimulate catecholamine release, which in turn increases HR and BP.
- Current AHA Guidelines advise the clinician to consider naloxone in suspected OA-OHCA but do not recommend its administration.
- Less than 25% of EMS systems in the US mention naloxone in CA protocols.
- To date, there are no prospective studies that have assessed the efficacy of naloxone in OA-OHCA or undifferentiated OHCA in general.

Objective

- To evaluate the association between naloxone administration and clinical outcomes for patients with OHCA. More specifically, the authors sought to determine whether naloxone was associated with increased ROSC and survival to hospital DC.

Methods

- Retrospective cohort study
- EMS agencies in Sacramento County, San Francisco County, and Yolo County between 2015-2023.
- Patients
 - Included:
 - Adults ≥ 18 years
 - Nontraumatic OHCA
 - Resuscitation attempted by EMS clinicians.
- Primary outcome
 - Survival to hospital discharge
- Secondary outcomes
 - Sustained ROSC
- Exposure
 - EMS-administered naloxone during OHCA resuscitation
 - Cardiac arrest was identified as drug-related when the arrest was caused by a known or presumed overdose of legal or illegal substances.
 - Determination of OA-OHCA was made by the treating EMS clinician.

Results

- A total of 8,195 patients included in the analysis
 - Nonshockable rhythms: 82%
 - Shockable rhythms: 18%
 - OA-OHCA: 8.7%
- Naloxone Administration
 - Administered in 1,165 patients (14%)
 - Patients were younger, more likely to be male, and had fewer comorbidities than those who did not receive naloxone.
 - More common with nonshockable rhythms and unwitnessed arrests.
- Primary Outcome – Survival to hospital discharge
 - Naloxone Group: 15.9%
 - Nonexposed Group: 9.7%
 - NNT of 26
- Secondary outcome – Sustained ROSC
 - Naloxone Group: 34.5%
 - Nonexposed Group: 22.9%
 - NNT of 9

Limitations Identified by Authors

- Observational study
- Selection bias – EMS clinicians more likely to administer naloxone in patients with suspected OA-OHCA; younger patients more likely to receive naloxone and also more likely to have fewer comorbidities and more likely to survive.
- Investigators do not have data for why naloxone was given in individual cases. Also did not have data on route of naloxone administration, timing of naloxone administration, or know if naloxone had also been given by bystanders.
- Patient population geographically limited to 3 counties in Northern CA.

Take Home Points

- EMS-administered naloxone was associated with improved ROSC and survival to hospital discharge in patients with OHCA (both OA-OHCA and OHCA).